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USING GOOGLE SITES© AS AN INNOVATIVE LEARNING TOOL AT UNDERGRADUATE LEVEL IN HIGHER EDUCATION

Abstract

Using engaging and entertaining learning tools and techniques inside and outside the classroom has become imperative in order to ensure, amongst others, subject-matter retention for the scholars of today. These technologies are not restricted to enriching course content alone and can also stimulate and encourage students to participate in collaborative learning processes. In this paper, the use of Google Sites© is described to encourage collaborative learning. The research findings are supported with outcomes from student questionnaires. The research found that integrating Google Sites© into undergraduate education will be beneficial for improving Information Systems knowledge and competence.

Keywords: Social Computing, Google Sites©, Net Generation, Higher Education, Collaborative Learning, Student Engagement.

1 Introduction

From the time of using technology and the internet for teaching and learning, Information Systems education has been facilitated by the important element of collaborative learning. “We are entering a world in which we all will have to acquire new knowledge and skills on an almost continuous basis.” (Brown & Adler, 2008). This study focuses on Information Systems(IS) education which will investigate the use of the Google Sites learning tool to facilitate IS education in the Informatics 112 1st year module of the University of Pretoria based on social collaborative learning principles (Roodt & De Villiers, 2011).

The concept of social learning is the creation of understanding through interaction. Social learning focuses on the ‘how’ rather than the ‘what’ of education and emphasizes the need for students to be able to participate in study groups and the interchange of knowledge. There are a number of clear benefits to a social learning environment that cannot go unnoticed, one obvious benefit being that students are able to enter into a comfortable and non-threatening “peer learning environment” where they can clarify uncertainties while taking hold of the material more easily by asking questions and acquiring different views from fellow students (Brown & Adler, 2008).

The main inspiration for this paper is the research and analysis of an innovative method of learning, being the use of Google Sites for group work, which has been applied for the first time in the Department of Informatics at the University of Pretoria. In view of the fact that this is the first year that the University has applied this innovative and technologically advanced learning method, the research is important to establish the feasibility of continuing with this learning method in the future. The author believes that this research paper will make a meaningful contribution to the body of knowledge regarding the use of web 2.0 technologies for education (Roodt & De Villiers, 2011).

2 Literature Review

2.1 Collaborative Learning

Collaborative learning is best described (Hilke, 1990) as “*an organizational structure in which a group of students pursue academic goals through collaborative efforts. Students work together in small groups, draw on each other’s strengths and assist each other in completing the task.*”

Collaborative learning has five basic elements (Gabbert *et al*, 1986):

1. Positive goal interdependence which occurs when learners undertake a group task believing that they cannot succeed unless everyone in the group succeeds.
2. Face-to-face promotive interaction which occurs when a verbal interchange takes place. With technology today this need not be face-to-face or verbal, but can be using electronic communication.
3. Individual accountability which means taking responsibility for learning material by giving individual tests, presentations, etc.
4. Social skills which involves knowing how to communicate effectively and how to develop respect and trust within a group.
5. Group processing to reflect on how well the group is working and to analyse the members’ effectiveness and how it may be improved.

Collaborative learning is also referred to as group work in education or small group learning, although not all group work can be called collaborative learning. There is a consensus among researchers, that collaboration involves the construction of meaning through interaction with others and can be characterised by a joint commitment to a shared goal (Häkkinen *et al*, 2003). Collaborative learning is often defined in a way that necessitates participants to be engaged in a co-ordinated effort to solve a problem or perform a task together (Littleton & Häkkinen, 1999). This coordinated, synchronous activity is the result of a continued attempt to construct and maintain a shared conception of a problem (Roschelle & Teasley, 1995).

According to Jones and Issroff (2005) the social nature of learning is one reason for this focus on collaborative situations and web 2.0 technologies are well suited to this.

2.2 Social Computing

Social computing, also referred to as social informatics, can be defined as “...*the interplay between persons’ social behaviours and their interactions with computing technologies*” (Fun & Wagner, 2008). Social computing involves both science and technology. As a domain of science, we seek to describe the relationships among social behaviours and machines so that we can reduce our uncertainty about how humans and machines will interact (Roodt, 2010). As a domain of technology, we seek to apply social and behavioural science to the design of information technology systems that enable efficient collaboration and support natural social behaviours.” (Dryer *et al*, 1999). Social computing is “...*any type of computing application that serves as an intermediary or a focus for a social relation...*” (Fun & Wagner, 2008). A layman’s understanding of this term would be that social behaviour, whether desired or otherwise, can be supported through information technology. When focussing on the latter, being the technology domain, then applications such as blogs, wikis and social networks could be used to support collaborative learning as these applications are a form of social software that encourages interaction and collaboration.

The authors focus on using social software in the form of certain Web 2.0 technologies in order to facilitate a participative educational process for collaborative learning (Roodt *et al*, 2009).

2.3 Net Generation

The Net Generation, also referred to as ‘The Millennials’ (Carlson *et al*, 2000), is the term used to describe people who were born between 1980 and 1994, coinciding with the introduction of the personal computer and the internet. These young adults exhibit a number of characteristics that make them unique, largely attributable to their fascination and familiarity with new technologies (Oblinger & Oblinger, 2005). One of these characteristics is described by Howe and Strauss (2000), who argue that these people, many of whom are now university students, mentally process information differently because they were raised with the personal computer. Oblinger and Oblinger (2005:16) refer to this mental processing as “...*the ability to process or piece information together from multiple sources.*” The other defining characteristics are (Oblinger & Oblinger, 2005):

- Ability to read visual images—they are intuitive visual communicators.
- Visual-spatial skills—perhaps because of their expertise with games they can integrate the virtual and physical.
- Inductive discovery—they learn better through discovery than by being told.

- Attentional deployment—they are able to shift their attention rapidly from one task to another, and may choose not to pay attention to things that don't interest them.
- Fast response time—they are able to respond quickly and expect rapid responses.

For the academic community, these students present a paramount challenge, not only because they learn differently from traditional learning methods but also because they want to learn differently (Roodt et al, 2009).

The Net Generation presents a material challenge to the academic community, not only because they learn differently from traditional learning methods but also because they want to learn differently (Roodt et al., 2009). In terms of the defining characteristics mentioned above, there are ten features that have a potential impact on higher education (Oblinger & Oblinger, 2005):

- Digitally Literate – They can operate a variety of technological devices and are familiar with the internet, for example: laptops, cellphones and/or iPods ®.
- Connected – They are almost always connected to a technological network of some sort, for example: cellular networks and/or the internet.
- Immediate – They have fast response time and multi-task, for example: playing a game and instant messaging at the same time.
- Experiential – They have an exploratory style of learning and have a preference for 'learning by doing' which results in better memory retention of the subject matter, for example: creating an animation to teach peers about green IT instead of writing a document.
- Social - They seek to interact with others, whether in their personal lives, their online presence, or in class, for example: blogging and having social network profiles on a network such as Facebook ®.
- Teams – They prefer to learn and work in teams, for example: a peer-to-peer approach where students help each other.
- Structure – They like to know what it will take to achieve a goal, for example: rules, priorities and/or procedures for doing a task.
- Engagement and Experience – They like interactivity, for example: watching a Google Sites ® video on a topic instead of reading slides.
- Visual and Kinesthetic – They are more comfortable in image-rich environments than text, for example: looking at pictures showing the impact of global warming instead of reading text.
- Things that Matter – They readily take part in community activities and want to learn about things that matter, for example: environmental concerns.

The consequences of this is that educators have to adapt not only their teaching methods, learning tools, content and assessment criteria, but also themselves in order to effectively help educate these students (Roodt et al., 2009).

2.4 Google Sites©

Google Sites, as the new site publishing service is known, is a scaled back version of JotSpot, an easy-to-edit service for organizations and individuals to set up and edit Web sites (Auchard, 2008).

Google Sites allows non-technical users to organize and share digital information such as Web links, calendars, photos, videos, presentations, attachments and other documents in an easy-to-maintain site (Auchard, 2008).

Google Sites enables any user invited to join a site to edit pages without requiring knowledge of Web coding or design. Individual team members can also create profile pages of their activities, interests and schedules. In school settings, Google Sites can function as virtual classrooms for posting homework assignments, class notes or other student resources (Auchard, 2008).

3 Course Overview for the Google Sites® Integration

The course is titled “Business Driven Technology” and is a mandatory subject for all first-year undergraduate students enrolling in the Faculty of Economic and Management Sciences at the authors’ institution. The purpose of this course is to introduce students to computing and more specifically its application within a business context.

Part of the course included completing a group assignment which involved the following tasks:

- Creating a video on how businesses can use Web 2.0 technologies using Google Sites® (collaborative **learning tool** in the form of multimedia technology)
- Creating a Facebook® group which all of their team members need to join, containing their student details (collaborative **learning tool** in the form of a Web 2 technology)
- Creating a Google website for the group onto which they needed to upload their Google Sites® video to (collaborative **learning tool** in the form of a Web 2 technology)
- Linking 1, 2 and 3 above by placing a link to their Google® page on their Facebook® group profile.

The authors required groups to have between 4 to 6 group members and they were **assessed** on the following **criteria**: Completeness, Creativity, Functional, Originality and Relevance. The assessment was conducted by the authors and the authors’ assistant lecturers. Planning has commenced to revise the assessment process for the following year in order to include some form of peer-to-peer review.

4 Research Methodology

4.1 Research Approach

This study was conducted in order to contribute to the body of knowledge relating on the use of the innovative learning tool, Google Sites, for higher education. This was done by examining the experiences of 185 1st year undergraduate students with regards to the effectiveness of the teaching and learning approach.

Upon completion of the group assignment discussed in the above section, the students were asked to complete an on-line survey which assessed the effectiveness of the teaching and learning approach with regards to how businesses can use Web 2.0 technologies. This paper focuses on assessing the use of Google Sites as an innovative learning tool.

4.2 Research Design

The authors created a web-based questionnaire containing closed questions that was uploaded onto the institutions web-based course platform so that students could access the questionnaire both on-campus and off-campus. The questionnaire was setup to start at a certain time on a certain day and to end at a certain time on certain day and no maximum time limit was set for the completion thereof. Students were informed of this in class, on Facebook (through the course group) and on the course platform via a pop-up announcement.

4.3 Research Sample

The research sample was selected from 1st year undergraduate commerce students who are enrolled in a mandatory business driven technology course. The purpose of this course is to introduce students to computing and more specifically its application within a business context.

For the 2011 year, there were 1387 students enrolled for the course and 185 of them completed the questionnaire. The questionnaire contained a large number of questions, twenty of which related specifically to the use of the innovative learning tool, Google Sites, for collaborative learning purposes. Three demographic questions and four Google Sites related questions will be discussed below. The actual question numbers are included in brackets as well as the possible range of answers.

These questions were:

1. What gender are you? (1.1)
2. What is your age? (1.2)
3. From which ethnic group are you? (1.4)
4. I have learnt more in the group when using Google Sites than I would have learnt on my own (10.14)
[Always/Definitely; Frequently/Nearly Always; Occasionally/Seldom; Never]
5. I enjoyed working in a group using Google Sites (10.15)
[Always/Definitely; Frequently/Nearly Always; Occasionally/Seldom; Never]
6. It was fun working in a group using Google Sites (10.20)
[Always/Definitely; Frequently/Nearly Always; Occasionally/Seldom; Never]
7. Do you think that learning to use Google Sites as part of the INF112 was successful? (10.9)
[Yes; No; Not answered]

5 Findings

This section details the questions and the results of the questions mentioned in the above section.

Question 1.1 Gender

	Response	Percentage
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Male	76	41
Female	103	56
Not answered	6	3
Total	185	100

Table 1: Gender

As can be seen in Table 1 above, the majority of students are female (56%).

Question 1.2 Age

Age	Response	Percentage
17	2	1
18	50	27
19	73	39
20	34	18
21	11	6
23	5	3
24	1	1
25	0	0
26	1	1
27	1	1
28	0	0
29	0	0
30	0	0
Not answered	7	4
Total	185	100

Table 2: Age Distribution

The majority of students are between the ages of 18 to 20 which means that they can be considered as the Net Generation according to the definition discussed in the literature review.

Question 1.3 Ethnicity

Race	Response	Percentage
Caucasian	56	30
Black	85	46

Indian	7	4
Asian	2	1
Other	25	14
Not answered	10	5
<i>Total</i>	185	100

Table 3: Ethnicity

The majority of the students are Black, with the second major ethnicity being Caucasian.

Question 10.14 I have learnt more in the group when using Google Sites than I would have learnt on my own

	Response	Percentage
1. Definitely	51	28
2. Nearly always	50	27
3. Seldom	29	16
4. Never	27	15
Not answered	28	15
<i>Total</i>	185	100

Table 4: Google Sites (10.14)

As can be seen in Table 4 above, the majority of students (55%) feel that they have learnt more when using Google sites than they would have otherwise. It is though interesting to note that a material amount of students (31%) did not feel the same way. This adds weight to the argument that learning in collaborative settings is more beneficial to the learning process for the students than if they were learning on their own. These findings also support the argument that social software can be used for collaborative learning at undergraduate level in higher education.

Question 10.15 I enjoyed working in a group using Google Sites

QUESTION 10.15	Response	Percentage
1. Definitely	55	30
2. Nearly always	54	29
3. Seldom	33	18
4. Never	16	9
Not answered	27	15
<i>Total</i>	185	100

Table 5: Google Sites (10.15)

As can be seen from Table 5 above, the majority of students (59%) enjoyed working in a group using Google Sites. Enjoyment is an important factor in student engagement which can contribute positively to subject-matter retention.

Question 10.20 It was fun working in a group using Google Sites

QUESTION 10.20	Response	Percentage
1. Definitely	62	34
2. Nearly always	46	25
3. Seldom	29	16
4. Never	19	10
Not answered	29	16
<i>Total</i>	185	100

Table 6: Google Sites (10.20)

As can be seen from Table 6 above, the majority of students (59%) feel that it was fun working in a group using Google Sites.

Question 10.9 Do you think that learning to use Google Sites as part of the INF112 was successful?

QUESTION 10.9	Response	Percentage
1. Yes	131	61
2. No	16	7
Not answered	67	31
<i>Total</i>	214	100

Table 7: Google Sites (10.9)

As can be seen from Table 7 above, the vast majority of students (61%) felt that learning to use Google Sites as part of the course was successful. Given the fact that Google Sites was used in a collaborative learning setting, it proves that Google Sites can be used for collaborative learning at undergraduate level in higher education.

6 Conclusion

The implementation of Google Sites has had a remarkable positive impact on the students since an overwhelming majority of students perceived the use of Google Sites as an innovative learning technology as a major enhancement in improving their general computer knowledge. It can be assumed that the students accept the technology as part of the educational process and experience the use of Google Sites as significant achievement of IS competence.

Through the results given from the questions asked, the authors have determined that group work is an essential part of the educational toolkit (especially in large courses with upwards of 1500 students). Even so the findings of this paper indicate that group work can be significantly enhanced through the use of Web 2.0 technologies, in this case Google Sites. This Web 2.0 tool is designed to allow group work and collaboration in an open and distributed manner, and is thus ideal for supporting group work activities. Furthermore Google Sites provides an interface with which increasingly more students are familiar, especially in terms of students being classified as part of the Net Generation, and thus reduces the initial learning curve they might have within the subject. It is also interesting to note that for many students the enjoyment gained from using a tool such as Google Sites, enhances not only their retention of the subject matter but also their entire learning experience.

Further research is being conducted by the authors to assess the effectiveness of each of the teaching methods and learning tools both individually, collectively and then holistically. This will provide insight into the effectiveness of utilising social computing in the form of social software within the

higher education context. It will also provide insight into the learning preferences of the Net Generation which will have an important influence on the strategic direction of the institutions teaching and learning approaches.

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